Title (en)
SEMICONDUCTOR HETEROSTRUCTURE THERMOELECTRIC DEVICE

Title (de)
THERMOELEKTRISCHE ANORDNUNG MIT HALBLEITER-HETEROSTRUKTUR

Title (fr)
DISPOSITIF THERMOÉLECTRIQUE À HÉTÉROSTRUCTURE SEMI-CONDUCTRICE

Publication
**EP 2392035 A4 20140402 (EN)**

Application
**EP 09839405 A 20090129**

Priority
US 2009032447 W 20090129

Abstract (en)
[origin: WO2010087832A1] A semiconductor heterostructure thermoelectric device (101). The semiconductor heterostructure thermoelectric device (101) includes at least one thermoelectric heterostructure unit (110). The thermoelectric heterostructure unit (110) includes a first portion (112) composed of a first semiconductor material and a second portion (114 ) composed of a second semiconductor material that forms a heterojunction (116) with the first portion (112). The first semiconductor material has a first electrical conductivity and a first thermal conductivity; and, the second semiconductor material has a second electrical conductivity and a second thermal conductivity. The second semiconductor material is disposed as at least one sub-micron patch (244d) of the second portion (114). In addition, the second semiconductor material includes an alloy of the first semiconductor material with an alloying constituent. The dimensionless figure of merit of performance for the semiconductor heterostructure thermoelectric device (101), defined by ZT, is greater than unity.

IPC 8 full level
**H01L 35/00** (2006.01); **H01L 35/02** (2006.01)

CPC (source: EP US)
**H10N 10/17** (2023.02 - EP US)

Citation (search report)
- [XI] WO 02080280 A1 20021010 - UNIV CALIFORNIA [US], et al
- [X] JP 3002466 B1 20000124
- [E] KR 20090101585 A 20090929 - IUCF HYU [KR]
- See references of WO 2010087832A1

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR

DOCDB simple family (publication)
**WO 2010087832 A1 20100805**; CN 102369610 A 20120307; EP 2392035 A1 20111207; EP 2392035 A4 20140402; US 2011284046 A1 20111124

DOCDB simple family (application)
**US 2009032447 W 20090129**; CN 200980158442 A 20090129; EP 09839405 A 20090129; US 200913146883 A 20090129